

Claims:

1 1. A network spanning heterogeneous call center
2 controller for use with a circuit-switched private branch
3 exchange and a packet-switched private branch exchange, the
4 network spanning heterogeneous call center controller
5 comprising:

6 a circuit-switched private branch exchange interface to
7 communicate with the circuit-switched private branch
8 exchange;

9 a packet-switched private branch exchange interface to
10 communicate with the packet-switched private branch exchange;
11 and

12 a processor coupled to the circuit-switched private
13 branch exchange interface and to the packet-switched private
14 branch exchange interface.

1 2. The network spanning heterogeneous call center
2 controller of claim 1, wherein the circuit-switched private
3 branch exchange interface sends circuit-switched instruction
4 messages to the circuit-switched private branch exchange and
5 where the packet-switched private branch exchange sends
6 packet-switched instruction messages to the packet-switched
7 private branch exchange.

1 3. The network spanning heterogeneous call center
2 controller of claim 2, wherein the circuit-switched

3 instruction messages include a message to transfer a circuit-
4 switched call to a selected agent terminal.

1 4. The network spanning heterogeneous call center
2 controller of claim 3, wherein the agent terminal is coupled
3 to the circuit-switched private branch exchange.

1 5. The network spanning heterogeneous call center
2 controller of claim 3, wherein the packet-switched
3 instruction messages include a message to transfer a voice
4 over internet protocol call to an internet enabled agent
5 terminal.

1 6. The network spanning heterogeneous call center
2 controller of claim 5, wherein the internet enabled agent
3 terminal is connected to the packet-switched private branch
4 exchange.

1 7. The network spanning heterogeneous call center
2 controller of claim 2, wherein the circuit-switched
3 instruction messages includes a message to place a circuit-
4 switched call in a call queue.

1 8. The network spanning heterogeneous call center
2 controller of claim 2, wherein the circuit-switched
3 instruction messages includes a message to apply a telephony
4 resource to a circuit-switched call.

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1 9. The network spanning heterogeneous call center
2 controller of claim 8, wherein the telephony resource
3 comprises a message to apply music on hold call treatment.

1 10. The network spanning heterogeneous call center
2 controller of claim 3, wherein the circuit-switched call is a
3 circuit switched voice call transmitted over the public
4 switched telephone network.

1 11. The network spanning heterogeneous call center
2 controller of claim 1, further comprising a network manager
3 interface, the network manager interface responsive to the
4 processor.

1 12. The network spanning heterogeneous call center
2 controller of claim 11, further comprising a network manager
3 console coupled to and responsive to the network manager
4 interface.

1 13. The network spanning heterogeneous call center
2 controller of claim 11, further comprising a peripheral
3 interface, the peripheral interface coupled to the circuit-
4 switched private branch exchange interface, the packet-
5 switched private branch exchange interface, and to the
6 processor.

1 14. The network spanning heterogeneous call center
2 controller of claim 13, further comprising a memory, the
3 memory coupled to the processor via a bus, the memory
4 containing a plurality of network spanning heterogeneous
5 command and control instructions.

1 15. The network spanning heterogeneous call center
2 controller of claim 13, further comprising a database, the
3 database containing a plurality of call records created for a
4 plurality of calls serviced by network spanning heterogeneous
5 call center controller.

1 16. The network spanning heterogeneous call center
2 controller of claim 15, wherein a first set of the data
3 records are created for a first set of agents, and a second
4 set of the data records are created for a second set of
5 agents.

1 17. The network spanning heterogeneous call center
2 controller of claim 16, wherein the first set of data records
3 contain a data entry indicating service for a first company
4 and the second set of data records contain a data entry
5 indicating service for a second company.

1 18. The network spanning heterogeneous call center
2 controller of claim 15, wherein the database is
3 communicatively coupled to the processor.

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1 19. A method of operating a network spanning call center
2 controller that couples to both a circuit-switched private
3 branch exchange and to a packet-switched private branch
4 exchange, the method comprising:

5 receiving an indication that a circuit-switched call has
6 been received by the coupled circuit-switched private branch
7 exchange; and

8 communicating an instruction message to transfer the
9 call to an agent terminal coupled to either the circuit-
10 switched private branch exchange or to the Public Switched
11 Telephone Network coupled to the circuit-switched private
12 branch exchange.

1 20. The method of claim 19, further comprising:

2 selecting a telephony resource to be applied to the
3 circuit-switched call; and

4 applying the selected telephony resource to the circuit-
5 switched call.

1 21. The method of claim 19, further comprising:

2 monitoring the call for a call interrupt; and

3 upon detecting a call interrupt, placing the call into a
4 call queue.

1 22. The method of claim 19, further comprising placing
2 the call into a call queue prior to transferring the call to
3 the agent terminal.

1 23. The method of claim 19, further comprising creating
2 and storing a call record.

1 24. The method of claim 19, further comprising:
2 receiving an indication that a voice over internet
3 protocol call has been received by the coupled packet-
4 switched private branch exchange; and
5 communicating an instruction message to the coupled
6 packet-switched private branch exchange to transfer the voice
7 over internet protocol call to a packet-switched enabled
8 agent terminal coupled to the packet-switched private branch
9 exchange.

1 25. The method of claim 24, further comprising
2 providing data services to a call originator of the voice
3 over internet protocol call.

1 26. The method of claim 24, further comprising providing
2 data resources to an internet enabled agent terminal
3 servicing the voice over internet protocol call.

27. The method of claim 26, wherein the data resources are selected from the group consisting of web page content, and call processing menus.

28. The method of claim 26, wherein the data resources comprise electronic mail.

29. A network spanning heterogeneous call center controller comprising:

a public switched telephone network input;

an internet connection input;

a switching element responsive to the public switched telephone network input;

an internet protocol interface responsive to the internet connection input;

a telephony resource module connectable to the switching element;

a processor, the processor coupled to a data bus, the data bus coupled to the internet protocol interface and the switching element;

a first set of agent output channels responsive to the switching element, the first set of agent output channels directed to communicate with circuit switched agent terminals; and

a second set of agent output channels responsive to the internet protocol interface, the second set of agent output

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20 channels directed to communicate with internet enabled agent
21 terminals.

1 30. The network spanning heterogeneous call center
2 controller of claim 29, further comprising a data resources
3 module to provide selected data resources via the internet
4 protocol interface.

1 31. The network spanning heterogeneous call center
2 controller of claim 29, further comprising a domain
3 conversion module, the domain conversion module to convert
4 between internet protocol traffic and circuit switched voice
5 traffic, the domain conversion module responsive to the
6 internet protocol interface.

1 32. A network spanning heterogeneous call center
2 comprising:

3 a circuit-switched private branch exchange;
4 a packet-switched private branch exchange;
5 a network spanning heterogeneous call center controller;
6 a first control path connecting the circuit switched
7 private branch exchange and the network spanning
8 heterogeneous call center controller;

9 a second control path connecting the packet-switched
10 private branch exchange and the heterogeneous call center
11 controller; and

12 a network, the network responsive to the circuit-
13 switched private branch exchange, the packet-switched private
14 branch exchange, and to the heterogeneous call center
15 controller, the network having a plurality of output
16 communication channels for connection to a plurality of agent
17 terminals.

1 33. The network spanning heterogeneous call center of
2 claim 32, further comprising a voice channel between the
3 circuit switched private branch exchange and the network, a
4 control channel between the network spanning private branch
5 exchange call controller and the network, and a voice and
6 data channel between the internet based private branch
7 exchange and the network.

1 34. A method for operating a network spanning
2 heterogeneous call center controller with a circuit-switched
3 private branch exchange and a packet-switched private branch
4 exchange, the method comprising:

5 receiving a circuit-switched call event from the
6 circuit-switched private branch exchange;

7 receiving an internet protocol call event from the
8 packet-switched private branch exchange; and

9 processing the circuit-switched call event and the
10 internet protocol call event responsive to the circuit-
11 switched private branch exchange and responsive to the
12 packet-switched private branch exchange.

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1 35. The method of claim 34, further comprising sending a
2 circuit-switched instruction message to the circuit-switched
3 private branch exchange and sending an internet protocol
4 instruction responsive to the packet-switched private branch
5 exchange.

1 36. The method of claim 35, wherein the circuit-switched
2 instruction message is a call transfer message and wherein a
3 call from the circuit-switched private branch exchange is
4 routed to a selected agent device in response to the circuit-
5 switched instruction message.

1 37. The method of claim 35, wherein the internet
2 protocol instruction message is a call transfer message and
3 wherein call data from the internet based private branch
4 exchange is routed to a selected internet enabled agent
5 device in response to the internet protocol instruction
6 message.